What is claimed is:

1. An apparatus for detection of direct sequence spread spectrum signals in networking systems, comprising:

a detection unit adapted to take a sample sequence from a preamble of a newly arrived network packet, comprising:

a first means for calculating a sequence of correlation measures between said sample sequence and a pseudo-noise code sequence of length L, where L is a positive integer;

a second means for calculating an accumulation sequence in which each accumulation value thereof is obtained by summing N correlation measures that are selected at an interval of L from said sequence of correlation measures, where N is a predetermined integer number;

a third means for evaluating a statistic of said sample sequence over a multiple of L number of samples; and

a decision making unit for determining the presence of direct sequence spread spectrum signals based on a comparison between said statistic of said sample sequence and a predetermined threshold scaled by the maximum of said accumulation sequence.

2. The apparatus as recited in claim 1 wherein said accumulation sequence comprises L number of effective

accumulation values and said second means calculates said accumulation sequence, $\{A_m(N)\}$, from said correlation measure sequence, $\{C(n)\}$, by the following equation:

$$A_m(N)=\sum_{k=0}^{N-1} C(m+k\cdot L)\,,\quad m=0,\ 1,\ 2,\ldots,\ L-1$$

where n denotes a time instant, m denotes an integer index, $C(n)$ denotes one of said correlation measures at time instant n, and $A_m(N)$ denotes one of said accumulation values at index m.

3. The apparatus as recited in claim 2 wherein said decision making unit declares the presence of direct sequence spread spectrum signals if the following condition can hold true:

$$\frac{\max\limits_{m}\{A_m(N)\}}{E_r(N)} > 1/\rho$$

where $\max\limits_{m}\{A_m(N)\}$ denotes the maximum of said accumulation sequence, $E_r(N)$ denotes said statistic of said sample sequence, and ρ is said predetermined threshold.

4. The apparatus as recited in claim 2 wherein said decision making unit declares the presence of direct sequence spread spectrum signals if the following condition can hold true:

$$\frac{\max\limits_{m}\{A_m(N)\}}{E_r(N)} > 1/\rho\,,\quad N=N_1,\ N_1+1,\ldots,\ N_2$$

where $N_2>N_1$, N_1 and N_2 are positive integers, $\max\limits_{m}\{A_m(N)\}$ denotes the maximum of said accumulation sequence, $E_r(N)$

denotes said statistic of said sample sequence, and ρ is said predetermined threshold.

5. The apparatus as recited in claim 1 wherein said third means evaluates said statistic over $(N-1)$ times L number of samples of said sample sequence.

6. The apparatus as recited in claim 5 wherein said statistic of said sample sequence, $E_r(N)$, is given by:

$$E_r(N) = \sum_{n=0}^{(N-1)\cdot L-1} |r(n)|^2$$

where n denotes a time instant and $r(n)$ denotes a sample of said sample sequence $\{r(n)\}$ at time instant n.

7. The apparatus as recited in claim 5 wherein said statistic of said sample sequence, $E_r(N)$, can be approximated by the following equation:

$$E_r(N) = \sum_{n=0}^{(N-1)\cdot L-1} |r(n)|$$

where n denotes a time instant and $r(n)$ denotes a sample of said sample sequence $\{r(n)\}$ at time instant n.

8. A method for detection of direct sequence spread spectrum signals in networking systems, comprising the steps of:

taking a sample sequence from a preamble of a newly arrived network packet;

calculating a sequence of correlation measures between said sample sequence and a pseudo-noise code sequence of length L, where L is a positive integer;

calculating an accumulation sequence in which each accumulation value thereof is obtained by summing N correlation measures that are selected at an interval of L from said sequence of correlation measures, where N is a predetermined integer number;

evaluating a statistic of said sample sequence over a multiple of L number of samples; and

determining the presence of direct sequence spread spectrum signals based on a comparison between said statistic of said sample sequence and a predetermined threshold scaled by the maximum of said accumulation sequence.

9. The method as recited in claim 8 wherein said accumulation sequence, $\{A_m(N)\}$, comprises L number of effective accumulation values and is calculated from said sequence of correlation measures, $\{C(n)\}$, by the following equation:

$$A_m(N) = \sum_{k=0}^{N-1} C(m + k \cdot L), \quad m = 0, 1, 2, \ldots, L-1$$

where n denotes a time instant, m denotes an integer index, $C(n)$ denotes one of said correlation measures at time instant n, and $A_m(N)$ denotes one of said accumulation values at index m.

10. The method as recited in claim 9 wherein said determining step declares the presence of direct sequence spread spectrum signals if the following condition can hold true:

$$\frac{\max\limits_{m}\{A_m(N)\}}{E_r(N)} > \frac{1}{\rho}$$

where $\max\limits_{m}\{A(N)\}$ denotes the maximum of said accumulation sequence, $E_r(N)$ denotes said statistic of said sample sequence, and ρ is said predetermined threshold.

11. The method as recited in claim 9 wherein said determining step declares the presence of direct sequence spread spectrum signals if the following condition can hold true:

$$\frac{\max\limits_{m}\{A_m(N)\}}{E_r(N)} > \frac{1}{\rho}, \quad N = N_1, N_1 + 1, \ldots, N_2$$

where $N_2 > N_1$, N_1 and N_2 are positive integers, $\max\limits_{m}\{A(N)\}$ denotes the maximum of said accumulation sequence, $E_r(N)$ denotes said statistic of said sample sequence, and ρ is said predetermined threshold.

12. The method as recited in claim 8 wherein said statistic of said sample sequence is evaluated over $(N-1)$ times L number of samples of said sample sequence.

13. The method as recited in claim 12 wherein said statistic of said sample sequence, $E_r(N)$, is given by:

$$E_r(N) = \sum_{n=0}^{(N-1)L-1} |r(n)|^2$$

where n denotes a time instant and $r(n)$ denotes a sample of said sample sequence $\{r(n)\}$ at time instant n.

14. The method as recited in claim 12 wherein said statistic of said sample sequence, $E_r(N)$, can be approximated by the following equation:

$$E_r(N) = \sum_{n=0}^{(N-1)\cdot L-1} |r(n)|$$

where n denotes a time instant and $r(n)$ denotes a sample of said sample sequence $\{r(n)\}$ at time instant n.

15. A method for detection of direct sequence spread spectrum signals in networking systems, comprising the steps of:

taking a sample sequence from a preamble of a newly arrived network packet;

calculating a sequence of correlation measures between said sample sequence and a pseudo-noise code sequence of length L, where L is a positive integer;

calculating an accumulation sequence, $\{A_m(N)\}$, from said sequence of correlation measures, $\{C(n)\}$, as follows:

$$A_m(N) = \sum_{k=0}^{N-1} C(m + k \cdot L), \quad m = 0,\ 1,\ 2, \ldots,\ L-1$$

where

n denotes a time instant,

m denotes an integer index,

$C(n)$ denotes a correlation measure of said sequence $\{C(n)\}$ at time instant n,

$A_m(N)$ denotes an accumulation value of said sequence $\{A_m(N)\}$ at index m, and

N is a predetermined integer number;

evaluating a statistic of said sample sequence over a multiple of L number of samples;

normalizing the maximum of said accumulation sequence with respect to said statistic of said sample sequence; and

determining the presence of direct sequence spread spectrum signals based on a comparison between a predetermined threshold and said normalized maximum of said accumulation sequence.

16. The method as recited in claim 15 wherein said normalized maximum of said accumulation sequence, $NLA_{\max}(N)$, is obtained by:

$$NLA_{\max}(N) = \frac{\max_{m}\{A_m(N)\}}{E_r(N)}$$

where $\max_{m}\{A_m(N)\}$ denotes the maximum of said accumulation sequence and $E_r(N)$ denotes said statistic of said sample sequence.

17. The method as recited in claim 16 wherein said determining step declares the presence of direct sequence spread spectrum signals if the following condition can hold true:

$$NLA_{\max}(N) > 1/\rho, \quad N = N_1, N_1 + 1, \ldots, N_2$$

where ρ is said predetermined threshold, $N_2 > N_1$, N_1 and N_2 are positive integers.

18. The method as recited in claim 15 wherein said statistic of said sample sequence is evaluated over $(N-1)$ times L number of samples of said sample sequence.

19. The method as recited in claim 18 wherein said statistic of said sample sequence, $E_r(N)$, is given by:

$$E_r(N) = \sum_{n=0}^{(N-1)\cdot L-1} |r(n)|^2$$

where $r(n)$ denotes a sample of said sample sequence $\{r(n)\}$ at time instant n.

20. The method as recited in claim 18 wherein said statistic of said sample sequence, $E_r(N)$, can be approximated by the following equation:

$$E_r(N) = \sum_{n=0}^{(N-1)\cdot L-1} |r(n)|$$

where n denotes a time instant and $r(n)$ denotes a sample of said sample sequence $\{r(n)\}$ at time instant n.